



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Dennis M. Hilton, et al.
Serial No. : 10/044,407
Filed : January 11, 2002
For : FOAMED FIREPROOFING COMPOSITION AND METHOD
Examiner : Toomer, Cephia D.
Art Unit : 1714

Attorney
Docket No. : 621P001

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450
on September 29, 2004 (Date)

Kevin S. Lemaick
Name of applicant, assignee, or Registered Representative

[Signature]
Signature
September 29, 2004
Date

DECLARATION UNDER 37 C.F.R. §1.132

I, Dennis M. Hilton, hereby declare:

That I am a now Research Manager for W.R. Grace & Co.-Conn. and have been since 1988; that from March of 1979 to 1988 I was a Senior Chemist for W.R. Grace, that from March of 1979 to the present I have worked in fire protection research and development where my responsibilities included development of fire protection formulations and commercialization thereof.

That I hold a Master's degree in Environmental Science from Rutgers University;

That I hold a B.S. degree in Chemical Engineering from Rutgers University;

That I am a named inventor on eight issued United States patents in the field of fireproofing;

That I have reviewed the above-referenced patent application as well as the Office Actions, and I am familiar with its prosecution and the

cited reference. The tests reported in the following pages were carried out by me or under my supervision, and I have made the following observations and conclusions with respect thereto.

1. A prefoam was formed by making a 5% solution of polyvinyl alcohol in water and foaming the solution. A mixture of cellulose and glass fiber (3.66%) and gypsum as the hydraulic binder (91.46%) was added to the resulting foam so that the concentration of PVA in the resulting foam was 4.88%. The mixture was spray applied to a steel substrate and had a density of 37.4 pcf.

2. A second foamed product was made in accordance with the present invention, wherein the same amounts of PVA, fiber and gypsum as above were first mixed and then were foamed. The resulting foam was spray applied to a steel substrate and had a density of 21.2 pcf.

3. Forming a prefoam first as in Chao '030 caused several problems that render the resulting product not practical for commercial use. Once the polyvinyl alcohol solution is foamed, the bubbles began to collapse. First they coalesced and thus became easier to break. The longer the time that passes, the more the bubble structure deteriorated. Since it takes time to pump the generated foam to a location where the other ingredients (the hydraulic binder, etc.) can be added, the bubble structure deteriorated significantly. The polyvinyl alcohol foam continued to deteriorate as the other ingredients were mixed in. In addition, pumping a foam was very difficult, since it is very compressible.

4. The significant reduction in density (43.3%) of the sprayed fireproofing that results when the process of the present invention is carried out and a prefoam is not used is due to less foam coalescing and results in the ability to protect more steel with the same weight of fireproofing. This results in a significant cost savings.

5. Perhaps even more significant is the added step of forming the prefoam. It takes considerable time to dissolve the PVA and make the 5% solution. For even moderate application rates of the product, 125 gallons per hour of the 5% PVA solution must be continually produced. Since

PVA can only reach 50% dissolved at 50°F in 45 minutes and 80% dissolved at 70°F, high temperatures are required as well as large mixing vessels on-site to meet the commercial requirements if a prefoam is employed as in Chao '030. Additional labor is required as well. These factors make it commercially unfeasible to form a prefoam.

6. I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.



Dennis M. Hilton
Research Manager
W.R. Grace & Co.-Conn.